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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,098	08/18/2006	Haruo Koizumi	1081.1266	6597
21171 7590 05/27/2009 STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER SHERMAN, STEPHEN G	
			ART UNIT 2629	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/554,098

**Applicant(s)**

KOIZUMI ET AL.

**Examiner**

STEPHEN G. SHERMAN

**Art Unit**

2629

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8500)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 10/21/2005; 11/29/2006; 1/5/2007



## **DETAILED ACTION**

### ***Drawings***

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claims 1, 5, 6, 9-12 and 15 are objected to because of the following informalities:

Claim 1 is objected to because it recites "feeding temperature information detected by said temperature detecting unit back to input signal control unit", which is improper English. The claim should be amended to recite "feeding temperature information detected by said temperature detecting unit back to an input signal control unit." and claim 1 also recites "temperature detecting unit installed..." which should be amended to recite "a temperature detecting unit installed..."

Claims 5 and 6 are objected to because they recite "image quality adjustment is performed by reducing a number of sustain pulses in said sustain discharge of said plasma display panel" which should be amended to recite "image quality adjustment is performed by reducing a number of sustain pulses in said sustain discharge period of said plasma display panel."

Claims 9-11 are objected to because they recite "wherein said input signal control unit control a..." which should be amended to recite "wherein said input signal control unit controls a..."

Claim 12 is objected to because it recites "said temperature detecting unit are disposed" which should be amended to recite "said temperature detecting unit is disposed."

Claim 15 is objected to because it recites "drives a plasma display panel in accordance with a signal from input signal control unit" which should be amended to recite "drives a plasma display panel in accordance with a signal from an input signal control unit."

The examiner notes that there be other grammatical errors in the claims not mentioned by the examiner, and as such a review of the claims should be made by the applicant to make sure the claims conform to proper English grammar standards.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites "wherein said power module is provided in a plurality, and said temperature detecting unit are disposed in the respective upper portions of said power modules" which is unclear because claim 1 recites "temperature detecting unit" which is singular, but claim 13 is reciting that "said temperature detecting unit are", which makes it unclear as to whether or not there are a plurality of temperature detecting units.

For the purpose of examination the examiner will assume the applicant intends to claim in claim 13 that there is also a plurality of temperature detecting units.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1, 4, 10-15 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-3 and the specification, page 1, line 11 to page 2, line 18 and page 5, line 11 to page 13, line 27.) in view of Watanabe (US 2002/0140640).

**Regarding claim 1**, AAPA discloses a plasma display device comprising:

a power module which has a plurality of power devices (Figure 1, 40-45 and page 6, lines 24-26); and

a temperature detecting unit (Figure 1, 10, 90 and page 6, lines 14-24).

AAPA fails to teach that the temperature detecting unit is installed in said power module, wherein the temperature of said power module is controlled by feeding temperature information detected by said temperature detecting unit back to input signal control unit.

Watanabe discloses a plasma display device comprising:

a power module (Figure 4, 25); and

a temperature detecting unit installed in said power module (Figure 4, 30), wherein the temperature of said power module is controlled by feeding temperature information detected by said temperature detecting unit back to input signal control unit (Figure 4 shows that the temperature of the power module is controlled by feeding the information detected by circuit 30 to the input control unit 31. See paragraphs [0080]-[0093].).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to have a temperature detecting unit as taught by AAPA arranged in the power module as taught by Watanabe in order to accomplish power control without delay, preventing instantaneous over-power and significantly relaxing requirements to a power source (Watanabe, paragraph [0020]).

***Regarding claim 4***, AAPA and Watanabe disclose the plasma display device according to claim 1.

AAPA also disclose wherein said power module is used to perform a sustain discharge on a plasma display panel (Figure 1 and page 9, lines 17-24).

***Regarding claim 10***, AAPA and Watanabe disclose the plasma display device according to claim 1.

AAPA also disclose wherein said input signal control unit control a voltage level of said sustain discharge of said plasma display panel in accordance with said temperature information (Page 9, lines 17-24).



**Regarding claim 11**, AAPA and Watanabe disclose the plasma display device according to claim 1.

AAPA also disclose wherein said input signal control unit control a magnitude of a power source current used in said sustain discharge of said plasma display panel in accordance with said temperature information (Page 12, line 19 to page 13, line 3.).

**Regarding claim 12**, AAPA and Watanabe disclose the plasma display device according to claim 1, wherein said power module is disposed in a perpendicular direction to the ground, and said temperature detecting unit are disposed in an upper portion of said power module (Figure 3 of AAPA shows power modules that are perpendicular to the ground, while Figure 4 of Watanabe shows that the temperature detection unit 30 is in an upper portion of said module 25.).

**Regarding claim 13**, AAPA and Watanabe disclose the plasma display device according to claim 12, wherein said power module is provided in a plurality, and said temperature detecting unit are disposed in the respective upper portions of said power modules (Figure 3 of AAPA shows that the power module is provided in a plurality, while Figure 4 of Watanabe shows that a temperature detection unit in one power module is disposed in the upper portion, and thus in combination, all of the temperature detection units will be disposed in the upper portions.).

**Regarding claim 14**, please refer to the rejection of claim 13, where if a temperature detection unit is located in every power module, then there is a temperature detection unit in the power module disposed in the uppermost position.

**Regarding claim 15**, this claim is rejected under the same rationale as claims 1 and 13.

**Regarding claim 18**, this claim is rejected under the same rationale as claim 4.

**Regarding claim 19**, AAPA and Watanabe disclose the power module according to claim 15.

Watanabe also discloses wherein said temperature detecting unit comprises a temperature detection element provided in the vicinity of said power devices (Figure 4 shows thermal sensor 26), and

a temperature detection circuit (Figure 4, seventh circuit 30), connected to said temperature detection element (Figure 4 shows sensor 26 connected to circuit 30), for outputting the temperature information that corresponds to the output of said temperature detection element (Figure 4 shows the output 30a is outputted from circuit 30, which corresponds to the output of thermal sensor 26.).

**Regarding claim 20**, AAPA and Watanabe disclose the power module according to claim 15.

Watanabe also discloses wherein said temperature detecting unit comprises a temperature detection element provided in the vicinity of said power devices (Figure 4 shows thermal sensor 26),

said temperature detection element is connected to a temperature detection circuit (Figure 4 shows sensor 26 connected to circuit 30), and

said temperature detection circuit outputs the temperature information that corresponds to the output of said temperature detection element (Figure 4 shows the output 30a is outputted from circuit 30, which corresponds to the output of thermal sensor 26.).

AAPA also discloses wherein a temperature detection circuit provided on the exterior of said power module (Figure 3 shows that the detection circuit is located outside the power modules.).

***Regarding claims 21-23***, AAPA and Watanabe disclose the power module according to claim 20.

AAPA and Watanabe fail to explicitly teach wherein said temperature detection element is a thermistor, diode or thermo-electric couple, and said temperature detection circuit outputs said temperature information on the basis of a resistance characteristic of the thermistor, a forward direction voltage characteristic of said diode, or a voltage characteristic of said thermocouple, respectively. However, besides these elements being known in the art, the specification does not describe any of these elements as being essential to the invention, and therefore, it would have been an obvious design

choice to "one of ordinary skill" in the art at the time the invention was made to use any known detection element known in the art to detect the temperature dependent upon the design and specifications of the display device.

8. Claims 2, 3, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-3 and the specification, page 1, line 11 to page 2, line 18 and page 5, line 11 to page 13, line 27.) in view of Watanabe (US 2002/0140640) and further in view of Morimoto (US 7,068,243).

***Regarding claim 2***, AAPA and Watanabe disclose the plasma display device according to claim 1.

AAPA and Watanabe fail to explicitly teach wherein when the temperature of said power module reaches or exceeds a predetermined value, the output of said power module is blocked.

Morimoto discloses wherein when the temperature of a power module reaches or exceeds a predetermined value, the output of said power module is blocked (Column 17, lines 40-50 explain that power supply is "discontinued" which means that it is "blocked" as claimed.).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to block the power output as taught by Morimoto of the power module taught by the combination of AAPA and Watanabe in order to prevent the circuit element from being destroyed.

***Regarding claim 3***, AAPA and Watanabe disclose the plasma display device according to claim 1.

AAPA and Watanabe fail to explicitly teach wherein when the temperature of said power module rises above a predetermined value, control is performed to hold the temperature of said power module at a fixed value, and when this condition remains unchanged for a predetermined time period, the output of said power module is blocked, thereby entering a low power consumption mode.

Morimoto discloses wherein when the temperature of a power module rises above a predetermined value, control is performed to hold the temperature of said power module at a fixed value, and when this condition remains unchanged for a predetermined time period, the output of said power module is blocked, thereby entering a low power consumption mode (Column 17, line 58 to column 18, line 7 explains that when the temperature of a certain value is exceeded, that the high-voltage line is disconnected and that this operation is continued to try to reduce the temperature below a certain point, however, if the temperature remain high for a period of time then the operation of the element is stopped, i.e. blocked.).

Therefore, it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to block the power output as taught by Morimoto of the power module taught by the combination of AAPA and Watanabe in order to prevent the circuit element from being destroyed.

**Regarding claim 16**, this claim is rejected under the same rationale as claims 2 and 3.

**Regarding claim 17**, this claim is rejected under the same rationale as claim 3.

9. Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Figures 1-3 and the specification, page 1, line 11 to page 2, line 18 and page 5, line 11 to page 13, line 27.) in view of Watanabe (US 2002/0140640) and further in view of Teranishi (JP 2002-304,150 A).

**Regarding claim 5**, AAPA and Watanabe disclose the plasma display device according to claim 1.

AAPA and Watanabe also disclose wherein said power module is used to display and image, and when said temperature of said power module is lower than said predetermined temperature, the temperature of said power module is detected by said temperature detecting unit, and when said temperature increase saturation temperature of said power module is equal to or greater than said predetermined temperature, image quality adjustment is performed (Watanabe, paragraphs [0030]-[0031] and [0070]-[0079] and AAPA, page 6, lines 14 to page 7, line 4 explain that the temperature is used in a comparison to determine if the pulse number exceeds a maximum number needed for the temperature and thus using the maximum if the number is exceeded and then just

using the number determined if it is lower than the maximum, i.e. image quality adjustment is performed).

AAPA and Watanabe fail to explicitly teach wherein said temperature information is converted into a temperature increase saturation temperature of said power module using a conversion table stored in advance in a storage device, and said converted temperature increase saturation temperature of said power module is compared with a predetermined temperature, and image quality adjustment is performed by reducing a number of sustain pulses in said sustain discharge of said plasma display panel.

Teranishi discloses wherein temperature information is converted using a conversion table stored in advance in a storage device (Paragraphs [0013]-[0016] explain that a conversion table is stored for converting the temperature information into a value.), and image quality adjustment is performed by reducing a number of sustain pulses in said sustain discharge of said plasma display panel (Paragraph [0020]).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the temperature conversion taught by Teranishi in the device as taught by the combination of AAPA and Watanabe in order to provide accurate reproduction of an image according to the temperature.

**Regarding claim 6**, please refer to claim 5, wherein the conversion table stored in advance as taught by Teranishi is a coefficient stored in advance as claimed in claim 6 since the conversion table contains value to convert the temperature depending upon

what the temperature is, i.e. a coefficient value, and thus the coefficient stored is the conversion table.

***Regarding claim 7***, AAPA and Watanabe disclose the plasma display device according to claim 1.

AAPA and Watanabe fail to explicitly teach wherein said temperature information detected by said temperature detecting unit is a voltage.

Teranishi discloses wherein temperature information detected by a temperature detecting unit is a voltage (Figure 1, element 7 and paragraph [0016].).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the voltage conversion taught by Teranishi with the temperature detection taught by the combination of AAPA and Watanabe in order to provide for an accurate value for comparison.

***Regarding claim 8***, AAPA, Watanabe and Teranishi disclose the plasma display device according to claim 5, wherein said predetermined temperature is a solder surface prescribed temperature value (As explained above, it is the temperature of the device that is being detected and a temperature for comparison value is a temperature of the device, then the temperature used for comparison would also be a "solder surface prescribed temperature", i.e. temperature of the device broadly encompasses the solder surface.).



**Regarding claim 9**, AAPA and Watanabe disclose the plasma display device according to claim 1.

AAPA and Watanabe fail to explicitly teach wherein said input signal control unit control a number of pulses in said sustain discharge of said plasma display panel in accordance with said temperature information.

Teranishi discloses a plasma device wherein an input signal control unit controls a number of pulses in said sustain discharge of said plasma display panel in accordance with said temperature information.

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the controlling of the sustain pulses taught by Teranishi in the plasma display device as taught by the combination of AAPA and Watanabe in order to provide accurate reproduction of an image according to the temperature.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ide et al. (US 6,954,186), Kasahara et al. (US 6,351,253), Tokunaga et al. (US 6,630,796) and Correa et al. (US 7,079,126) each disclose of temperature sensing in plasma display panels.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN G. SHERMAN whose telephone number is (571)272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen G Sherman/  
Examiner, Art Unit 2629

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Supervisory Patent Examiner, Art Unit 2629

20 May 2009